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ABSTRACT

A 5-year research and development program, known as the Radio Language Arts Project (RLAP), was conducted in Kenya to develop, implement, and test the effectiveness of an instructional system that uses radio to teach English as a foreign language in the first three grades of primary school. The initial project year was spent in establishing and field testing the RLAP program. Beginning in 1982, daily 30-minute English lessons were broadcast to grade 1 students in 31 project schools located in 7 districts. Grade 2 lessons were broadcast to the same group of children in 1983, and grade 3 lessons in 1984. Radio was the major medium of instruction, but teachers had an important role during the broadcasts, as well as in pre- and post-broadcast activities. Based on initial results from a standard achievement test and on results from a questionnaire distributed to teachers and headmasters after the first year of broadcasting, it was found that students showed substantial achievement gains and that the program was very well received by school personnel. This publication discusses the use of instructional radio in various Third World countries; it also describes radio's effectiveness in classroom language teaching, using RLAP as a case study, and suggests implications of the RLAP instructional radio methodology for nonformal language education. An 11-item bibliography and background information on the authors are provided. (ESR)

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OCCASIONAL PAPER #12

English by Radio: Implications For Non-Formal Language Education

Maurice Imhoof, Philip R. Christensen
and Kurt Hein

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1984

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FOREWORD

Through its series of Occasional Papers, the NFE Information Center seeks to provide a forum for the exchange of ideas among those pioneering in the study and practice of non-formal education. In dynamic, relatively new fields of inquiry and experimentation, it is especially important to bring "ideas in progress" to the light of collegial scrutiny. We intend the papers in this series to provoke critical discussion and to contribute to the growth of knowledge about non-formal education.

Access to education has long been a concern for planners and practitioners. The Radio Language Arts Project (RLAP) addressed this concern by providing rural people in Kenya with high quality education at low cost. A five-year research and development project, The RLAP broadcast English language lessons by radio for students in a portion of the overall sample of 31 rural primary schools. The authors point to aspects of the RLAP that have important implications for radio instruction in non-formal education. One is the emphasis on "active learning," enabling learners to participate in the program by frequently requiring various types of responses. Another is the concept of "distributed learning" or "phased distribution of content," based on the idea that people learn better over time with multiple exposures to material.

The twelfth in the Center's series of Occasional Papers, we are particularly pleased to publish a paper that suggests how experience in formal schools might inform the practice of non-formal education.

We are most grateful to the authors for bringing their work to our attention and for allowing us to share it with development planners and practitioners in the NFE Network.

As always, we invite your comments and contributions to enrich the dialogue concerning important issues in non-formal eudcation.

Mary Joy Pigozzi, Director
Non-Formal Education Information Center

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TABLE OF CONTENTS

		Page
I.	OVERVIEW.	i
II.	THE EDUCATIONAL PROBLEM	2
III.	RADIO AS AN EDUCATIONAL DEVELOPMENT STRATEGY. . .	7
IV.	INSTRUCTIONAL DESIGN AND RADIO.	17
V.	THE RADIO LANGUAGE ARTS PROJECT RESEARCH DESIGN .	27
VI.	IMPLICATIONS FOR NON-FORMAL EDUCATION	36

I. OVERVIEW

One of the major issues faced by educational planners in the Third World is what to do about language. What language policy should be established? How can the languages designated for national use be taught effectively and economically?

The Radio Language Arts Project in Kenya is using instructional radio technology as one solution to the problems of language teaching in the Third World. The purpose of this five-year research and development project is to develop, implement and test the effectiveness of an instructional system that uses radio intensively. In this case, radio is being used to teach English as a foreign language at the first three grades of primary-school. It is expected that the model which emerges can be replicated, with modifications, in other Third World formal and non-formal educational systems.[1]

The general project design builds on Kenya's extensive experience for formal educational broadcasts to schools. It also draws on the results of several relevant projects in other countries, most particularly a radio-based primary-school mathematics project carried out in Nicaragua.

The Radio Language Arts Project (RLAP) views radio as an appropriate, cost-effective technology to reach the disadvantaged rural population, for whom educational opportunities are frequently limited because of poor educational resources. English-language arts programs are broadcast during school hours as part of the normal school curriculum in the project. The daily thirty-minute lessons fill the regular English period in the school timetable. Radio is the major

medium of instruction, but teachers have an important role during the broadcasts, as well as in pre- and post-broadcast activities. The radio lessons are designed to help teachers in the classroom improve their effectiveness in teaching difficult and important skills.

Language education for adults and children who do not have access to schools is an important development objective. Within the context of the larger educational problems faced by Third World countries, this paper discusses the use of instructional radio to solve some of these problems. It describes radio's effectiveness in classroom language teaching, using the RLAP as a case study. It also suggests implications of the instructional radio methodology developed in this project for non-formal language education.[2]

II. THE EDUCATIONAL PROBLEM

The odds against children in developing countries learning a foreign language effectively are increasing:

- School populations are increasing more rapidly than resources. Some of this increase is due to general population increase. In other instances, it is caused by the extension of formal schooling opportunities to previously unserved segments of the population.

- Many of the newer students are culturally and linguistically different from the older school population. Many are from the previously isolated rural populations.

- The rapid increase in school population has resulted in a growing percentage of inadequately trained teachers in many countries. Pre-service and in-service teacher training--both of which are expensive--have not kept pace with school growth. Language teaching in particular has suffered because of the longer time required to prepare teachers to be competent in two or more languages.

- Rising expectations for the acquisition of material benefits are fueled by a faith that education is a direct road to material success. These expectations often put demands on governments that are beyond available resources.

- Rising expectations have unfortunately been coupled with dwindling resources in many developing countries. The world economic situation has hit developing countries very hard at a time when they are trying to expand and improve educational opportunities.

- Many multi-ethnic countries must cope with competing community self-interests and conflicting traditions. Even where the concept of nationhood has the general support of the citizens, strong linguistic, religious, regional, or occupational ties with other members of their group prevent citizens from cooperating fully on all issues.

- Educational objectives and the supporting curriculum and teaching materials in developing countries frequently are produced by educators from the industrialized West or local leaders educated in the West. In some instances, this orientation produces patterns of education that are flawed in the context of the countries in which they are being used (Imhoof, 1981).

The problems facing educators--particularly language and literacy teachers--all relate to the efforts by developing countries to modernize. At the same time they are attempting to provide equal opportunities for all citizens, they are trying not to destroy the cultural traditions of the diverse groups making up the country. Such an approach to economic and educational reform strains the intellectual, political, and economic resources of countries.

Kenya as an Example

Kenya, the site of the RLAP, experiences some of the educational problems discussed above, including a complex linguistic situation.

Language varieties. The Kenyan national boundary encompasses diverse cultural groups and varied lingusitic communities. By some

counts there are more than forty languages belonging to three distinct language families.

The result of such language diversity is a heavy burden on the educational system. Finding an acceptable national medium for education in a multicultural, multilingual environment is a complex issue. Typically, educated Kenyans must operate in three languages: mother-tongue, in which they carry out the daily affairs of family and home; the national language, Swahili, which serves as the lingua franca of the country and East Africa as a whole; and English, the official language, used in situations such as schooling and government offices and services. The distinction between the official and the national language is not always clear in practice. Although spoken by a small minority of people in Kenya as a mother-tongue, Swahili is an indigenous language which serves as a lingua franca throughout the country. It is generally learned informally through the contexts of commerce and trade within the village or community. It is designated by the government as the national language and is most often used by speakers who do not speak the same mother-tongue in both informal settings and in official business in the larger cities. English is designated as the official language and is typically used when neither mother-tongue nor Swahili can be used (Fallows, 1981).

The educational system must insure that children receive the kind of language instruction that will permit them to realize their full potential through education. This means achieving an effective balance between three separate languages during the formative primary years.

Literacy. Kenya has attacked the problem of illiteracy using two different strategies. In the middle 1970s, the government eliminated

primary school fees in an effort to make primary education accessible to all. Enrollment soared. In the early 1980s, the government initiated an intensive adult literacy campaign using paraprofessional literacy workers and newly prepared print materials in the major indigenous languages (Kinyua, 1983). Both formal and non-formal educational approaches are now being used side by side.

Such strategies, however, strain the resources of conventional education programs, requiring textbooks, other teaching materials, classrooms, and teachers. The costs of developing a literate population within a short span of time can cause inequities between schools. The rural, newly-formed schools tend to suffer the most since meager resources usually are committed to areas in which the educational infrastructure is already in place.

Vernacular language education. At present, Kenya uses mother-tongue as the medium of instruction during the first three primary grades. During the last few years, educators have developed initial reading materials in the major languages of Kenya. Where classes are composed of mixed language background, or where there are no existing materials in the mother-tongue, Swahili is generally used as the medium since children are likely to know more Swahili than English.

The vernacular languages are used for transition education to allow the children to acquire rudimentary reading skills in their own languages and to begin their basic education through the mother-tongue. Beyond the third grade, no futher formal study of the mother-tongue is included in the curricula. The formal study of Swhaili begins at the fourth grade.

English and Educational Development

The rewards for educated speakers of an international language seem to outweigh the negative aspects of learning that language. This is the case even where there are efforts to nationalize educational systems and make greater and greater use of national languages. The language policies of many developing countries incorporate one of the major international languages into the school curricula. Some countries introduce the language at the very beginning of schooling, others delay until the end of primary school, a few others wait until even later. Still other countries have taken a different approach. They use one of the indigenous languages as the national language, but teach the international language for specific functions within the society.

The political, economic, and communication realities of the world require that a proportion of citizens in the Third World acquire facility in an international language. Most often the language is English. Ties to the industrialized countries necessitate skillful language use. Perhaps as importantly, communicaton between Third World countries, at present, can only be carried out through one of the international languages.

In Kenya, as in many developing countries, the problem is how to provide equitable, high-quality instruction within the resources of the nation. One approach taken is to experiment with radio as an educational medium. The RLAP is the first attempt to use radio intensively for language instruction.

III. RADIO AS AN EDUCATIONAL DEVELOPMENT STRATEGY

Emile McAnany (1973) stated five strategies for applying radio to development. These continue to serve as a useful paradigm for alternative approaches to educational radio. They are:

1) open broadcasting, in which programs of varying length are aired indiscriminately to a large radio audience;

2) instructional radio, in which specially prepared programs are broadcast for small, organized learning groups, usually in schools;

3) radio forums, in which programs are prepared not only to educate but also to motivate decision groups to act and alter some aspect of the environment;

4) radio schools, which are highly organized radio listening groups using support materials, trained monitors, and an established curriculum;

5) radio and animation, which promotes long-term trained discussion leaders (animators) able to use radio to increase the participation of community members in solving their own development problems.

The RLAP falls within the second of these strategies, instructional radio. Its goals correspond to the three primary educational functions of radio identified by Jamison and McAnany (1978): improving educational quality and relevance; lowering educational costs; and improving access to education, particularly in rural areas.

Instructional radio is by no means a new or untested educational technology. Jamison and McAnany cite three surveys supporting the conlcuison that radio, particularly when appropriately supplemented by visual material, can teach effectively. Radio remains the more attractive option in cases where substantial importance is attached to subject areas (e.g. mathematics or a second language) in which teachers are relatively weak.

As with any educational technology, radio involves costs against which its potential must be measured. Some are incremental costs, representing the expenditure of resources which would not otherwise be used, and others are simply opportunity costs, representing resources used for radio instead of something else. In Kenya, the incremental costs of developing and producing new instructional radio lessons must be borne by the Kenya Institute of Education's (KIE) operating budget. These also represent opportunity costs, since the same funds could be used to support other instructional strategies (such as writing and producing textbooks). There are also costs involved in broadcasting on the Voice of Kenya (VOK) Incremental costs are incurred because KIE must pay the VOK for air time and studio facilties. Opportunity costs occur because there is substantially more demand for radio time than can be met by the existing channels and schedule.

These costs must be justified by the potential advantages of radio over alternative approaches. Fortunately, radio offers numerous benefits to balance this equation.

Advantages of Radio

In many Third World countries, the relatively low cost of radio in comparison to other media (such as televison and print) has resulted in the wide distribution and use of radios. Schools frequently have access to radio receivers. In fact, with the help of the World Bank, Kenya is in the process of insuring that virtually every school in the nation has its own radio.

Maintenance is an issue which cannot be overlooked, but the servicing of simple radio receivers is far less difficult than that

required for more complicated broadcast technologies. Whereas television requires electricity, which is often unavailable in rural areas, radios can operate on batteries. Another advantage is that radio does not require the kind of expensive and cumbersome distribution system that so often leaves textbooks in cities instead of in rural schools. Instruction can be delivered, literally at the speed of light, anywhere there are radio receivers.

As an aural medium, radio can reach non-literate audiences. This is generally seen as an advantage in adult education, but it is equally valuable for the education of young children who cannot yet read. For them, radio can be used long before textbooks are practical. Radio encourages listeners to focus their attention and use their imagination. This can be particularly beneficial for young children, especially when radio is complemented with effective visual media.

Another advantage of radio is the ease with which it can be combined with other instructional modes. Printed media or props can be used to add a visual component to a radio-based lesson without detracting from the aurally-presented message. Well-designed radio instruction also can integrate classroom listeners into the programs.

As a medium for formal instruction, radio requires centrally developed programming. This allows a degree of control over content and pedagogy which cannot be achieved through textbooks or teacher training. In the case of foreign language instruction, for example, radio curriculum developers can have a direct influence over the quality of the language modeled and the methods of teaching that language to children. This advantage is particularly important where teachers are likely to be weak in the language and/or untrained in the methodologies which are now available for teaching foreign languages.

Disadvantages of Radio

As with any instructional medium, radio also has disadvantages. Start-up costs can be high, particularly for new, innovative series, and (as mentioned above) operating costs are a significant factor. Unless a country already has the necessary broadcasting infrastructure and sufficient radio receivers (along with the power lines or dry cell batteries necessary to run them), instructional radio will probably be prohibitively expensive to implement.

Radio is inherently a one-way medium, limiting the possibilities for responding to and reinforcing pupil responses in the classroom. A good teacher can evaluate and immediately react to a class's performance, but a radio teacher cannot be certain of what will be happening in the classroom when the lesson is broadcast. This is an important consideration in foreign language instruction, where there can be a variety of correct responses to a given stimulus (in contrast to mathematics, for example, where there is generally only one correct answer).

Radio lessons proceed at their own speed, independent of the listeners' responses. This can pose a minor problem for bright children, who may become bored if the radio lessons move too slowly to challenge them, but it can be a much more significant difficulty for slower pupils. If the radio lessons are not carefully designed, the slower children could fall further and further behind the instructional pace.

There are some problems with using an exclusively aural medium. For example, foreign language instruction requires a visual component

for teaching a variety of skills, from vocabulary comprehension to reading and writing. Printed materials can complement radio lessons to serve this function, but they create the need for a distribution system which would not be necessary otherwise. Television, on the other hand, can broadcast the visual as well as the aural message without relying on a physical distribution system. However it is highly unlikely that rural schools which have difficulty obtaining printed materials could take advantage of television, owing to the need for electricity, the expensive receiver sets, and the complexities of television transmission.

Another disadvantage is that all too often, particulary in the earlier days of educational broadcasts, radio lessons have not been designed to take advantage of the medium's strengths and minimize its weaknesses. Instead, they simply mimic conventional classroom instruction. Little wonder that such lessons have not proven effective.

Radio Education in the Third World

With the exception of printed materials, particularly textbooks, radio is the educational medium with perhaps the longest record of service in the Third World. In fact, instructional radio may well be one area in which the South holds the lead over the North, since the developed countries, for the most part, have subordinated radio to more complicated educational technologies. Instructional radio is an excellent candidate for technological cooperation among developing countries.

The breadth of such experiences with radio has been well documented.[3] This paper will confine itself to examining two cases

which are particularly relevant to the Radio Language Arts Project and to non-formal education: the particular experience of Nicaragua in teaching mathematics by radio, and the general history of instructional radio in Kenya.

Radio Mathematics

The Radio Mathematics Project[4] was an innovative effort to bring together two related technologies--radio and systematic instructional design--and to evaluate their effectiveness in teaching primary school mathematics.

Nicaragua faced the common problem of a scarcity of fully-trained teachers, particularly in schools outside of major urban areas. The Radio Mathematics Project attempted to improve the quality of mathematics instruction by focusing on basic skills in contexts relevant to the rural children it served.

Radio Mathematics fell squarely within the "instructional radio" category of McAnany's paradigm. It functioned entirely within the formal primary-school system, following the existing Nicaraguan mathematics curriculum. Radio, the primary instructional vehicle, was used to broadcast daily thirty-minute lessons to children in the second, third, and fourth years of primary school. The lessons were supplemented by teacher-led post-broadcast activities.

Radio Mathematics lessons resulted in significant achievement gains for radio classes over non-radio classes (from forty percent to sixty-five percent mean post-test item scores). They also reduced the number of children failing to advance to the next level in primary school (Friend, Searle & Suppes 1980). When pupils learn faster and advance

more regularly, educational costs go down. This trend can be accelerated by proper planning, particularly when the use of print materials is reduced (as it was in Radio Mathematics), thereby lowering production and distribution costs, and when the radio lessons are used over several years, thereby spreading development costs over time.

Radio and Language Instruction

Language and Language Arts Instruction. The most widespread use of radio in language instruction is in adult literacy programs around the world. UNESCO reported in a mid-1969 survey that utilization of broadcasting was increasing (Maddison, 1971). Forty surveyed countries were using, or had used, broadcasting techniques to combat illiteracy. All 40 countries reported using radio, while 20 also reported using televison. Broadcasting can, of course, be used for various purposes in literacy work--teacher training, promotion, publicity, motivation, as well as direct teaching. The obvious advantages of radio in low-income countries with geographically scattered populations have encouraged educators to use radio in formal and informal language instruction as well. As early as the 1950s, Thailand began to teach English with the help of radio. Efforts to upgrade education and provide equal educational opportunity to the entire country required creative methods to reach its widespread and frequently isolated people. In spite of a lack of qualified English teachers, it was decided to make English the international language of Thailand. The practical decision to teach English in part by radio enabled the country to implement educational reform quickly.

The scattered islands making up the Republic of the Philippines make radio a practical choice as an educational medium. Near the end of the 1950s, the Philippines began to use radio for language instruction in the classroom. Current efforts to give Pilipino equal status with English in the educational system have spurred new interest in radio language instruction.

In the vast, sparsely populated regions of Brazil, radio has been used as an important medium in literacy and basic education programs. During the first decade of operations, the Movement for Basic Education estimated that more than 400,000 peasants in northeast Brazil learned to read through the radio schools.

For quite different reasons, European countries have used radio to teach foreign languages. Sweden started language courses for adults in 1925. The success of these programs paved the way for the emphasis on bilingual language skills in the schools and the introduction of English as a required course by 1947. Radio brought foreign languages and foreign-language study, previously available only to the wealthy or adventurous who could study or travel abroad, to significantly more segments of the society. The Netherlands began broadcasting foreign-language instruction at about the same time and later added instruction in some of the languages of their colonies and former colonies. Radio and televison are now being used to teach a large and diverse immigrant population. In a country the size of the Netherlands, the appeal of radio is not that it covers widespread geographical areas but that it can economically reach a small audience.

England has been providing language instruction by radio for more than 50 years. With the tremendous worldwide growth of intrest in

learning English over the past 20 years, the BBC has broadcast a variety of English-language series, many of them tailored to the specific needs of an audience. At times, these broadcasts supplement work in a specific school curriculum. In other instances, they are open broadcasts for a general audience, with or without supporting instruction or textbooks.

There are no descriptions in the literature of radio language instruction in which the broadcasts have been designed as the sole means of instruction. Programs are sometimes used as the only instruction, however, especially in non-formal adult education. In other instances, the broadcasts may be minimally supported by correspondence lessons, or supported by a textbook--if the listener chooses to buy it. Many of these radio lessons offer no more than the reading of a standard textbook over the air. At best, this narration provides a pronunciation model of what is in the printed text, but none of the special advantages of radio as a medium have been used. This is perhaps understandable when we consider that the broadcaster--a non-specialist in language instruction--can easily reproduce on the radio what appears to be credible lessons already designed for the classroom by a language educator. An alternative to this, followed in some failed projects, is for the language educator--a non-specialist in broadcasting--to produce the broadcasts. This is equally amateurish and uninteresting when compared to professional programs. This is especially critical in non-formal broadcasting which has to compete with the entertainment programs on the radio.

Unfortunately, the evidence on the effectiveness of radio in language teaching is largely anecdotal. Few radio projects have had

controlled and sustained evaluation. Few of the now-abandoned projects have been adequately documented. In some cases, careful attention has been paid to evaluative conclusions supporting the use of radio, but no detailed descriptions have been provided of the broadcast materials or the evaluation methodology. The biggest gap in the meager literature, however, is in descriptions of the lessons and the samples of the broadcast scripts. One does not have a full description of the many variables which go into educational broadcasting and cannot properly evaluate the conclusions drawn by the author.

One senses that where such projects have failed, it has most often been the fault of factors other than the use of radio as a medium. In many instances, instructional broadcasts have been poor either in their pedagogy or in their execution by inexperienced broadcasters. In some cases, inadequate orientation of teachers and administrators has resulted in resistance to the radio broadcasts, with the result that radio lessons never received a fair hearing nor evaluation. In other cases, poor teacher orientation and follow-up has resulted in teachers viewing the radio broadcasts as a holiday or break for themselves, spending the broadcast lesson in the teachers' lounge. In still other instances in the Third World, the radio broadcasts were designed and executed by temporary expatriate specialists. Frequently, they left behind broadcast materials, but no trained staff to evaluate, revise, update, and expand these materials, resulting in a growing resistance to the materials as they became outdated. Probably the most widespread reason for discontinuing the use of radio as an instructional medium has been the failure of education authorities to provide adequate numbers of and maintenance for radios.

In spite of the rather extensive use of radio in educational development, the medium holds more potential for language instruction than has been previously realized. It is typical for radio programming to serve as the "icing on the cake" of language instruction. It provides natural dialogues spoken by native or standard speakers, exemplifying real or accurate models of the language. It provides listening comprehension practice for more advanced learners. It talks about language, especially its grammatical features, and illustrates them by example. It records literary works the learners are reading, and provides discussion of the literary work. In most instances, broadcasts are clearly meant to supplement in-class work. The RLAP is the first research project to study the feasibility of using radio as the major medium in English language instruction.

IV. INSTRUCTIONAL DESIGN AND RADIO

Instructional radio must be used properly in order to take advantage of its potential for teaching English as a foreign language. This requires careful attention to certain key principles of instructional design, not only in theory, but more importantly, in consistent practice. This section summarizes the most significant of the instructional design principles used by the RLAP, several of which are applications of approaches validated by the Radio Mathematics Project.

Intensive Use of Radio

The most common use of radio in language teaching has been to support other instructional strategies.[5]

The question that the RLAP seeks to answer is whether a more intensive use of radio can be justified by improved pupil performance and reasonable, possibly reduced, costs. In comparison with other schools broadcasts in Kenya, RLAP radio English lessons, known by the series title English in Action, are longer (thirty minutes instead of fifteen), are more frequent (new lessons daily instead of weekly), cover more of the school year (broadcasts thirty-nine out of forty weeks instead of twenty-four out of forty), and begin earlier (at the first year of primary school instead of the second). Over the first three years of primary school RLAP children will listen to 292.5 hours of radio English lessons, compared to the twelve hours of new radio instruction children in conventional classrooms receive in the same period.

This means that RLAP children are exposed to instructional radio for learning English almost twenty-five times as long as their counterparts in control classrooms. With this much time available, it becomes possible to assign a leading pedagogic role to radio. Rather than just supplementing textbooks and teachers, the radio lessons can carry a large share of the instructional burden.

Cost Control

The inherent costs of developing and broadcasting radio lessons have already been mentioned. It is important to ensure that no additional costs are unnecessarily associated with the methodology if

the total package is to remain economical. Furthermore, special projects such as the RLAP too often depend on resources (human and time, as well as material) which cannot be supported by normal operating budgets. In such cases, of course, no matter how impressive the results, the new methodologies can never be properly implemented.

The RLAP seeks to meet this challenge by minimizing two particularly significant costs: printed materials and teacher training. Recognizing the expense, difficulties, and uncertainties associated with printing and distributing materials, the RLAP depends as little as possible on the print medium. A brief guide to each lesson is prepared for the teacher. These can eventually be collected in a simple booklet which can be distributed separately or with other teacher's notes for other schools broadcasts.

Language teaching, of course, benefits substantially from visual perception. Wherever possible, the English in Action lessons ask the teacher to write or draw on the blackboard, prepare simple visual aids, or locate easily obtainable props. Few assumptions are made about textbook availability, although recommendations are given for how teachers should take advantage of those English textbooks which the school may supply.

In grade two, for example, teachers are given quidelines for using the Progressive Peak (Ministry of Education, 1976-77) books during non-radio English periods, but the radio English lessons themselves do not depend on these books. Instead, pupil worksheets are prepared as necessary to accompany the radio lessons (an average of one worksheet per week). These use typewritten text and simple, black-and-white line drawings, primarily to support reading work. During the project's pilot

phase the worksheets are being continuously developed in conjunction with the lesson scripts and distributed (with the teacher's notes) to project schools every two weeks. For national implementation, however, the worksheet can also be compiled as inexpensive booklets which would be less costly to print than conventional textbooks.

Formal teacher training has been limited to a one-day workshop at the beginning of the year. The workshop introduces teachers to the radio and the lessons, and explains how they can work effectively with this method. Many teachers have asked for longer training, but the costs would preclude national implementation of such a program. Instead, the radio lessons themselves are designed to give the teacher as much guidance and help as possible. The radio characters frequently give the teacher suggestions and request his or her help in various ways. The teacher's notes for each lesson also suggest the most effective ways to work with the radio. There is even the possibility of developing a radio-based in-service training program which could reduce or even eliminate the need for an initial workshop.

Systematic Instructional Devlopment

The Radio Language Arts Project integrates two appropriate educational technologies. Radio has already been explored in some depth in this paper. The second is systematic instructional development.

The RLAP is not a curriculum development project in the strict sense. It does not seek to determine what should be taught, for it follows the guidelines of the "Kenyan Primary English Syllabus" (Ministry of Education, 1978). Instead, it seeks to determine how the existing curriculum can best be taught with the help of radio. In order

to accomplish this, the syllabus must be translated into effective instruction which systematically imparts to pupils the objectives specifed by the curriculum. This is the process of instructional development.

The process begins with the writing of a "Scheme of Work" which translates the syllabus into a step by step sequence of language competencies, patterns, and vocabulary. Each step (called a "frame") focuses on the four basic skill areas (listening, speaking, reading, and writing), identifies links to existing material (such as the Progressive Peak supplementary readers) for possible follow-up use, and suggets a theme which can unify the lessons (for example, "At the shop"). Frames are designed and ordered following the best available principles of language teaching.

Each frame is translated into a series of lesson plans that guide the scriptwriting. The lessons are divided into segments, ranging from thirty seconds to several minutes in length. Multiple segments, in turn, are combined into instructional blocks, each assigned to a specific skill area. The organization of the lessons is constant. In grade two, for example, every lesson beings with a musical opening, followed by a speaking/listening block which runs for six minutes and concentrates on maintenance of previously taught patterns and vocabulary. The content of each segment varies from day to day, as specified by the script plan.

The instructional writers draft segments by following the script plans. They refer to the relevant frame in the Scheme of Work for the content and objectives which the segment must teach. The draft segments are then combined into a working script, which is reviewed for

congruence with the specifications in the Scheme of Work, for cultural appropriateness, and for production suitability.

Once the script has been approved, support materials (teacher's notes and pupil worksheets) are written and distributed to project classrooms. Formative evaluation instruments (discussed later in more detail) are prepared in order to check on whether the part of the curriculum under consideration was, in fact, mastered by the pupils. Formative evaluation results feed back into the script planning process, closing the loop. The entire process is designed to promote effective learning of precisely what is required by the syllabus.

Distributed Learning

Psychologists have long known that skills need to be practiced regularly to be maintained effectively, and that learning spread over time (distributed learning) is more effective than learning concentrated in only one period (mass learning). However, instructional designers generally have paid only lip service to the implications of this principle. By far the most common mode of instructional organization, whether by classroom teachers or mediated learning packages, is the "topic"--one lesson devoted to one subject.

The challenge of instructional efficiency addressed by the RLAP requires the application in practice of the distributed learning principle. This is one reason for the segmented script organization described in the previous section. Rather than devoting one English in Action program to a single topic or objective, each program consists of several segments teaching or maintaining different skills and competencies. A given competency, on the other hand, will be taught

over several consecutive lessons. Then, after a period of several weeks, it will be maintained over several more lessons.

In addition to promising to improve learning, this approach enhances the ability of the radio lessons to involve pupils. The relatively short attention span of lower primary children is much better served by only a few minutes of concentration on one topic. Their interest can be maintained more effectively through the presentation of a variety of material and through the quicker pace such variety promotes.

Active Learning

Children learn better when they are actively involved in the learning process. Radio, as a one-way broadcast medium, tends to encourage passivity among listeners unless careful steps are taken to promote active response. This is a central instructional design principle of the RLAP.

The first key to success in this area is getting children to accept the radio as a window into another world, whose characters can communciate with the pupils in the classroom. The primary instructional objectives of the early lessons for grade one centered on this task. Children learned to respond directly to commands and questions from the radio characters during carefully timed pauses in the broadcasts. Because those characters, in turn, seemed to reply to the children, a sense of two-way communication was created. By grade two this sense has become a strong foundation for the instructional message. With no hint of self-consciousness, pupils ask and answer questions of the radio characters, sing songs with them, play games with them, and travel with

them in the realm of imagination to a variety of locales where functional English can be acquired and practiced.

Once this two-way relationship is established, it is possible for the radio to effectively stimulate pupil participation. Writers try not to let more than ten to fifteen seconds lapse without requiring some sort of response from the children. The exact type of response depends on the instructional objective that is being treated. For example, pupils could be asked to answer a question, ask a question, repeat a pattern, work through a transformation drill, read a sentence, find a word, write a phrase from dictation, copy a sentence from the blackboard, sing a song, or play a short game requiring physical activity.

All of these techniques, and many others, involve children actively in each radio lesson. In this manner, the children's attention is firmly held, they are better able to acquire new skills, and they are likely to retain those skills more successfully. One result is that teachers and headmasters frequently comment on how much the children enjoy and are interested in the English in Action lessons.

Immediate Reinforcement

An important lesson for education from psychology is that learning is enhanced by immediate feedback to the learner. This is another area where the one-way nature of broadcast media can cause problems unless appropriate care is taken.

RLAP lessons are designed to serve teachers who may be weak in English, as well as those with good English skills. Therefore, each segment must be planned so that the pupils will benefit from everything

that the classroom teacher can contribute, but will not suffer if this contribution is limited. For this reason, the radio gives pupils correct answers to problems as often as possible.

The open-ended nature of language makes this far more difficult to implement for English than, for example, mathematics. In the case of reading exercises, the problems are minimal. If the child has been asked to read something, the radio can repeat it correctly. If a comprehension question has been asked, the radio can model an appropriate answer. In the case of writing, on the other hand, it is very difficult for the radio to provide effective reinforcement. The pupil's attention can be drawn to a model of the correct response, but his or her actual written work can neither be judged nor corrected by the radio. This remains the teacher's responsibility.

Oral language falls between these two extremes. In the first year of broadcasts it was fairly simple to anticipate the correct response to a queston, since the language available was relatively limited. However, as the children's English ability increases, so does the difficulty of reinforcing correct responses. For example, there can be several good answers to the question, "Where is Juma's book" Appropriate responses include, "It is on the table," "It's on the table," "On the table," "It's over there," etc. Fortunately, classroom observations suggest that the pupils are not confused by hearing the radio offer one correct answer after they have given a different one. Sometimes they will change their next answer to follow the radio's model, and sometimes they will continue with their own chosen pattern. This allows the continued use during the broadcast of the important instructional technique of immediate reinforcement.

The Teacher/Radio Partnership

English in Action radio lessons enhance the classroom teacher's effectiveness by bringing into rural classrooms instructional techniques which might not otherwise be available: systematic coverage of the curriculum, a strong model of correct English, sophisticated pedagogy, maximum exposure to the target language, and lessons which can capture children's attention and motivate them.

As the pupils' English improves, it becomes neither realistic nor efficient to expect the radio to be able to teach everything. It can carry a major instructional burden, but the greater the teacher's contribution, the more the children will benefit.

This partnership between teacher and radio is an important instructional design principle for the RLAP. It is implemented in two ways. First, in the process of preparing the Scheme of Work for each year a careful analysis is made of every objective to determine the most efficient way to teach it. Some objectives are designated most appropriate for instruction by radio. Other's are seen as being most effectively taught by the teacher, with the radio offering support. For these topics, lesson plans are prepared by RLAP staff so that they can be covered systematically, outside of the broadcast lessons.

A good example of this is writing practice. Only two minutes out of thirty in each grade two English in Action lesson is devoted to writing. This time is used to introduce the children to new skills (such as writing from dictation). Practicing these skills, on the other hand, is left to non-radio class periods under the teacher's guidance. Devoting half of the radio lesson to writing practice, with dead air in

the background while children execute tasks for which the radio can give little useful feedback, would be inefficient and ineffective.

Second, teacher's notes are prepared for every radio lessson to provide teachers with a clear picture of what will be covered and how they can work effectively with the radio. These notes summarize the content of the lesson, outline the preparation required, and give specific suggestions about what the teacher should do during the broadcast. The broadcasts themselves contain guidance for the teacher whenever necessary, to supplement the most important points in the teacher's notes. The in-service training workshop emphasizes how the teacher can help make the broadcasts more effective, but, more importantly, it emphasizes how the radio can enhance the teachers' effectiveness.

V. THE RADIO LANGUAGE ARTS PROJECT RESEARCH DESIGN

The RLAP's research design gives equal weight to two discrete strategies, one for formative evaluation, the other for summative evaluation. This balance attempts to address problems common to the research designs of other instructional radio projects. On the one hand, some projects have had little or no formative evaluation, making it difficult to correct weaknesses which remain unidentified until the final, summative evaluation (when it may be too late to do anything about them). On the other hand, many projects have had no effective summative evaluation at all, making it difficult to document and analyze the results with any confidence.

The RLAP research design uses a sample of thirty-one schools drawn from seven different districts in Kenya. In light of the mission to reach rural children, these schools were chosen to represent Kenya's rural population, limited only by the necessity of the project staff's being able to reach the schools for educational treatment and evaluation. Given the obvious importance of mother tongue as a variable in learning English as a foreign language, districts were selected to represent approximately seventy percent of the Kenya population linguistically. Schools were chosen by means of a stratified random sample, based on performance on the standarized primary school leaving examination. This ensured equal attention being paid to high, medium, and low scoring schools (AED, 1980).

These thirty-one project schools are divided into two subsets. For summative evaluation purposes, twenty-one schools are designated as pilot (i.e. experimental) schools. Pilot schools are visited only once a year by professional staff, for the sake of post-testing, and once a fortnight by a driver to deliver and collect print materials. This minimizes the possibility of improved test scores that result simply from taking part in an experiment and from concerned observation by project staff, the so-called Hawthorne effect in research.

For formative evaluation purposes, the remaining ten schools (matched on the basis of academic performance to ten of the pilot schools) are designated as observation schools. Formative evaluation data are collected from these schools several times each week. Because of the resulting intervention effects, observation schools are excluded from the summative evaluation sample.

Formative Evaluation

Not only has the RLAP given equal weight to formative and summative evaluation, but it also has applied a technique developed by the Radio Mathematics Project which makes formative evaluation an integral part of the instructional development process.

Conventional instructional development, particularly for educational media, follows a four-step procedure. Materials are developed, tried out in the field, revised on the basis of field test results, and finally, fully implemented. This can be termed the revision model. It is a thorough, well-validated methodology, but it is also expensive and time-consuming. If one wishes to develop a new radio lesson for virtually every day of the school year while minimizing costs at the same time, the revision model is impractical.

Radio Mathematics developed an alternative formative evaluation model based on the feedback system used in industry to control continuous processes. Its educational applicaton calls for the ongoing assessment of lesson effectivenss, with corrections being made (i.e. material being retaught and/or instructional methods revised) as necessary.

As applied in the RLAP, this system is labeled the feedforward revision system to underscore its emphasis on improving instruction through changes to future lessons. A team of two observers (professionals from the field assigned to the project on a part-time basis) is assigned to each of the ten observation schools. They observe three lessons each week, completing an observation form developed by project staff which focuses attention on the instructional methodology (teacher performance, pupil participation, common mistakes, etc.). They

also talk to teachers, eliciting their comments and suggestions. To these reports are added obsevations by the RLAP professonal staff members, each of whom observes once a week. Every Friday the observers administer an achievement test, also developed by project staff, which focuses on objectives that have been introduced or maintained during the week.

Formative evaluation data are compiled, analyzed, and summarized by the RLAP research specialist, who then presents the results to colleagues. Problems are identifed and decisions are made about correcting them. In some cases a specific problem (for example, an objective which was not mastered) will be solved by writing a limited number of segments to correct it (the objective will be taught again using a different instructional methodology). In other cases a general concern will be raised (for example, children have difficulty locating a specified section on worksheets), resulting in a new instructional design principle which will be applied throughout future lessons (perhaps a new worksheet format, and/or more time and cues given in the radio lesson to help children find the proper place).

When serious problems arise, of course, decisions are made to change lessons which have already been recorded. A segment which is observed to fail completely, leaving pupils confused and not participating, would evoke such a decison. But the emphasis of the feedforward formative evaluation process is on revisions to future materials. This requires that the instructional design principles on which materials are based be carefully validated to ensure that problems are the exception rather than the rule.

Before regular broadcasts began, the RLAP spent more than a year developing pilot radio lessons based on tentative principles about the most effective use of radio for teaching English as a foreign language. Those lessons were tested in classrooms, the results were evaluated, the design principles were revised, new lessons were developed based on the revised principles, and so on. As a result, the team was reasonably certain that the English in Action lessons would be successful and would not require an unacceptably high level of revision. In practice, this has proven to be the case. The radio lessons work well, and those problems identified through formative evaluation have been corrected without undue difficulty.

Summative Evalution

One option for the summative evaluation design was to match control and experimental schools and administer a post-test in both sets of schools simultaneously at the end of each broadcast year. The other option was to use the same set of schools for both control and experimental purposes, administering a post-test one year to children who have not been exposed to the treatment and the next year to children in the same classroom who have been exposed to the treatment. The second, lapped-year, research design was chosen.

This approach has two major advantages. The paucity of reliable data on school, teacher, and pupil quality make an attempt to construct a comparable set of control and experimental schools an uncertain one. By controlling the teacher variable as much as possible (i.e. by trying to keep the same teacher in the classroom from one year to the next), and by guarding against any untoward changes in the pupil cohort from one year to the next (for example, by avoiding schools in areas where

significant changes in the socio-economic and educational profiles of entering pupils from one year to the next are likely), the lapped-year design should ensure a closer match between control and experimental groups at the same schools than would be possible if two different sets of schools were used.

Second, the lapped-year design completely avoids the problem of contamination of control schools. Control groups are tested before the broadcasts to their grade begin, so there is no matched set of control and experimental schools used. This avoids the possibility that children in the control schools might listen to the radio lessons, thereby contaminating the results. Indeed, there are indications of widespread listening to English in Action lessons among non-project schools, and it may well have proven impossible to keep the control sample free of such interference.

The summative evalution strategy for one classroom (the basic unit of analysis) is summarized in the following chart.

Summative Evaluation Design for One Classroom

Year	Radio Classrooms (experimental)	Control Classrooms (control)
1981 (no broadcasts)		School A Classroom 1 Teacher X Pupil cohort alpha
1982 (standard 1 broadcasts)	School A Classroom 1 Teacher X Pupil cohort beta	School A Classroom 2 Teacher Y Pupil cohort alpha
1983 (standard 2 broadcasts)	School A Classroom 2 Teacher Y Pupil cohort beta	School A Classroom 3 Teacher Z Pupil cohort alpha
1984 (standard 3 broadcasts)	School A Classroom 3 Teacher Z Pupil cohort beta	

In November, 1981, pupils in the alpha cohort in classroom one (grade one) of this school (school A), having been taught for a year by teacher X without the radio English lessons, were given a post-test based on the Kenyan syllabus. Results from this test provided a pupil achievement record for the control group. In November, 1982, the same test was administered to pupils in the beta cohort. These children had spent a year in the same classroom (classroom one) with the same teacher (teacher X), but with the radio English lesson treatment. Their test results provided a pupil achievement record for the experimental group. The amount of time devoted to English each week was held constant from 1981 to 1982. A comparison of results between the control and experimental groups could then be used to evaluate the effectiveness of this use of instructional radio.

The same pattern is being followed during 1983 and 1984. The same set of schools will continue to be used for both control and experimental purposes. Pupil achievement and other variables will be measured in one year for control purposes and in the subsequent year, for experimental purposes. The same control and experimental cohorts of children will be followed because the RLAP is interested in cumulative results (i.e. the effect of three years of radio-based instruction versus three years of conventional instruction). Supplementary data will be collected through instruments such as surveys of teacher and headmaster attitudes.

Finally, a cost-effectiveness analysis will be undertaken to consider at least two interrelated areas. First, the costs of delivering radio-based English instruction will be compared to the costs of delivering conventional instruction. In Kenya, this conventional

instruction is at present print-oriented, with a common text and supplementary materials for each grade, including brief, supplementary radio broadcasts beginning in grade two. Second, the costs of radio-based instruction will be compared to pupil performance, which could be studied in relation to student retention at the standard level, poor achievement, drop-out rates, and budget levels.

Preliminary Results

Initial results are now available from the standard one achievement test and from the questionnaire distributed to teachers and headmasters after the first year of broadcasting. They show substantial achievement gains and strong support from school personnel (Owino and Christensen, 1983).

The standard one achievement test consisted of forty questions measuring listening comprehension and forty measuring reading comprehension, based on the standard one English vocabulary and structures specified by the Kenyan syllabus. The test was developed by project staff with the help of outside consultants. It was administered at the end of 1981 to children in twenty-one project schools who had not heard the RLAP radio lessons. Exactly the same test was given to children in the same twenty-one project schools at the end of 1982. These children had used the radio method to learn English.

Reading was not introduced in the standard one radio lessons until term three. Nevertheless, average scores for the forty reading comprehension items rose from 10.7 (26.7%) for children without the radio lessons to 13.1 (32.7%) for children with the radio lessons. This is a 22.5% improvement.

The results for listening comprehension were even stronger. On the forty listening items, average scores rose from 15.5 (38.8%) to 23.3 (58.2%), and 50.0% improvement. In other words, the intensive radio method of teaching English produced substantial gains in pupil performance after only one year of broadcasts. There is less than one chance in ten thousand that these results could have occured by chance. Improvement was found in every district and every vernacular language group represented in the project, and for schools scoring high, medium, and low on the national primary school leaving examination.

The questionnaires completed by teachers and headmasters showed that the radio English lessons have been very well received.

- 89% of those expressing an opinion rated the radio lessons as "good" or "excellent." No one rated them "poor."
- Daily teacher's notes, pupil worksheets and the initial inservice training day were received favorably by more than 90% of the staff.
- 99% of those responding felt that the radio pupils spoke better English after one year than pupils who had not had the radio lessons. 90% felt that the radio pupils would be ready to use English as the sole medium of instruction after standard three.
- Of the two-thirds of the school staff who felt they knew how parents were reacting to the radio lessons, 98% said that the reaction was favorable.
- When asked whether the radio lessons should be continued at their schools, only one teacher said "no" (because of problems with radio reception and materials distribution). The other 99% said "yes."

These first year results strongly suggest that intensive instructional radio will prove to be an effective tool for teaching English to rural primary school children. Pupils have already demonstrated significant gains in listening and reading comprehension. Teachers, headmasters, and parents are convinced that this method

works. They see improvement in their children's English, and they want to continue with the project.

VI. IMPLICATIONS FOR NON-FORMAL EDUCATION

Although this study has focused on the use of radio to serve as a medium of formal instruction, many of the lessons learned by the Radio Language Arts Project also can be applied to non-formal education.

Radio's appropriateness as a tool for non-formal education equals, if not surpasses, its utility for formal education. No other mass medium can reach an audience as large and diverse as the radio-listening audience, especially in developing countries.

Formal educational programming requires assigning the broadcast frequency to a narrow audience. In regions with a limited number of frequencies (for example, most of Africa), this may be both a costly and inefficienct use of a valuable resource. While non-formal programs may be intended for a specific target audience, they can be included in the normal broadcast schedule without disrupting the programming designed to appeal to a general audience. Many non-formal messages are deliberately designed to blend in with the popular programming.

What elements of the RLAP design are most relevant to the non-formal educational broadcaster? The most useful may be the concept of "active learning" (see pages 23-24). Perhaps the greatest challenge facing the non-formal broadcaster is attracting and holding the audience. The principal distinction between formal and non-formal educational broadcasting centers in the difference between a "captive" and a "casual" audience. The "captive" audience of the formal broadcast

cannot exercise the freedom of choice offered to the non-formal audience--the option of turning the dial or turning off the receiver. For this reason, one of the major tasks facing the non-formal educational broadcaster is to make the program interesting and engaging, to capture and maintain the audience's interest.

Both the Radio Mathematics Project and the Radio Language Arts Project engage the audience's attention in an unprecedented fashion. The lessons require regular, frequent, and varied listener responses. These include repetitions, recitations, spontaneous answers, physical movements, songs, and games. Both projects cite this innovation as critical to the success of the programs. This methodology should prove especially useful to the producer of non-formal programs, for it offers the listener an opportunity to become actively involved in the broadcast. Whereas classroom listeners are compelled to listen to the broadcast, the casual listener is under no such constraint. The casual listener is more likely to attend to the broadcast if he or she is given the opportunity to participate "in" it. The principle of "active learning" provides such opportunities.

A second feature of the English in Action programs that is relevant to non-formal programs is the concept of "distributed learning" (see pages 22-23). In fact, it is difficult to imagine a non-formal strategy that would not utilize repetition and an overlapping of subject matter. Given the nature of the casual audience, it is unlikely that a single presentation of material would be effective.[6]

The nature of "distributed learning" requires that the student/listener be provided with regular feedback. This is accomplished in the English in Action series through "immediate

reinforcement" (see pages 24-25). This principle seems especially useful in the non-formal setting, where no other means of evaluating one's response may be available. When coupled with the principle of "active learning," "immediate reinforcement" can provide the listener with a substantive learning experience in a very short period of time. This, of course, can prove invaluable in spots and short programs, and in broadcast campaigns of limited duration, perhaps the most common formats for non-formal radio broadcasts.

Formal education traditionally has relied upon summative data to determine pupil progress. Of course, teachers also use such data to determine the effectiveness of their lessons. An important innovation in educational broadcasting was the introduction of pre-testing. Pre-testing has helped producers improve the appropriateness and effectiveness of their lessons. In addition to these procedures, the RLAP has attempted to evaluate the effectiveness of each broadcast in the series and of each discrete segment within each broadcast. This has been accomplished through "formative evaluation" (see pages 29-31). One can assume that benefits derived from formative evaluation would apply to both the formal and non-formal educational broadcaster.

The "feedforward" system would be especially helpful for determining the effectiveness of messages designed to teach new or revised behaviors (such as administering oral rehydration therapy). Using formative evaluation procedures, producers can modify their messages to accomodate unforeseen circumstances. In this way, the broadcasts can be molded according to the demonstrated competence of the listeners. This means that "remedial" measures can be taken to correct problems in the programs before the problems do irreparable damage to

the project or, worse yet, to the listeners. It is possible that projects that have failed might have been salvaged had the design included formative evaluation procedures.

Conclusion

Summative evaluation results for the first year of the RLAP broadcasts strongly suggest that intensive instructional radio works well. The RLAP experience is part of the growing evidence that radio is an important medium in formal, classroom instruction for rural primary school children. Radio may be equally useful in carrying a larger instructional burden than it currently does in the education of the general, adult audience. More intensive use of radio for specific instructional objectives might more effectively reach adult audiences than techniques presently employed. The techniques and conclusions from formal education should encourage us to look again at the way radio is used in non-formal education.

Language instruction, especially in multilingual settings, can be carried out in both formal and non-formal radio formats. The dual need to both maintain the cultural and linguistic heritage of diverse populations and to build a unified nation that can take its place in the international community requires conscious attention to language skills. In the adult world especially, the kind of jobs available may depend to a considerable extent on the ability to speak and read a second or third language. Usually the non-formal audience is different from children attending school. The best radio techniques developed over years of experience by non-formal educators combined with a more intensive use of radio illustrated by the RLAP could be one way of meeting the demands for improving language skills in developing countries.

NOTES

1 The project is a joint venture between Kenya and the United States. The Kenyan executing agency is the Kenya Institute of Education, as authorized by the Ministry of Basic Education. The American executing agency is the Academy for Educational Development, under contract to the United States Agency for International Development through the Education Division of the Bureau for Science and Technology.

2 As of December 1983, the RLAP is in its fourth year of operation in Kenya. The initial year was spent in establishing the project (including assembling the professional team, selecting schools, and finalizing the research design), analyzing the Kenyan English curriculum and field testing a variety of methodologies for teaching English by radio. Regular broadcasts to thirty-one project schools in seven districts began with grade one in 1982. Grade two lessons were broadcast to the same cohort of children in 1983, and grade three in 1984. The results of the first year of broadcasting are reported in this paper. The cummulative achievements and costs based on the results of three years of broadcasting will be analyzed after the conclusion of the 1984 school year.

3 One excellent source of information is a series of case studies in the use of radio for education and development prepared by the World Bank in 1977 (Spain, Jamison, & McAnany). Another is a set of profiles for particular projects prepared by the Clearinghouse on Development Communication (1977 - 1983).

4 A joint venture of the Nicaraguan Ministry of Public Education and the U.S. Agency for International Development, through Stanford University's Institute for Mathematical Studies in the Social Sciences.

5 This has been true in Kenya, where lower-level primary children have long benefitted from one fifteen minute broadcast per week to support English lessons taught by classroom teachers with the Progressive Peak textbook series.

6 It is interesting to note that this concept of phased distribution of content is a cardinal principle in one of the most popular entertainment formats on radio and television, the "soap opera." Non-formal educational radio broadcasts that have followed this format, such as "The Archers in Great Britain" and "Man is Health" in Tanzania, have proven very successful.

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